Trend Study 16R-10-01

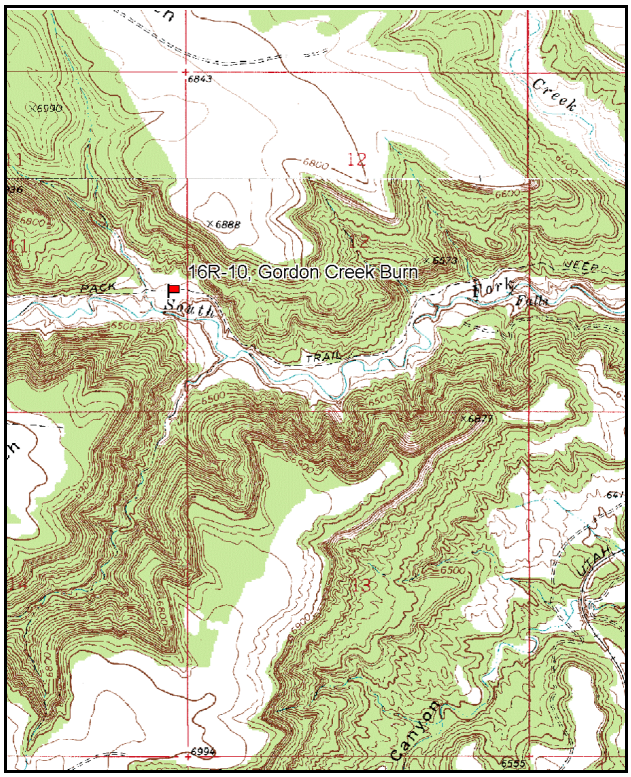
Study site name: Gordon Creek Burn . Vegetation type: Forage Kochia .

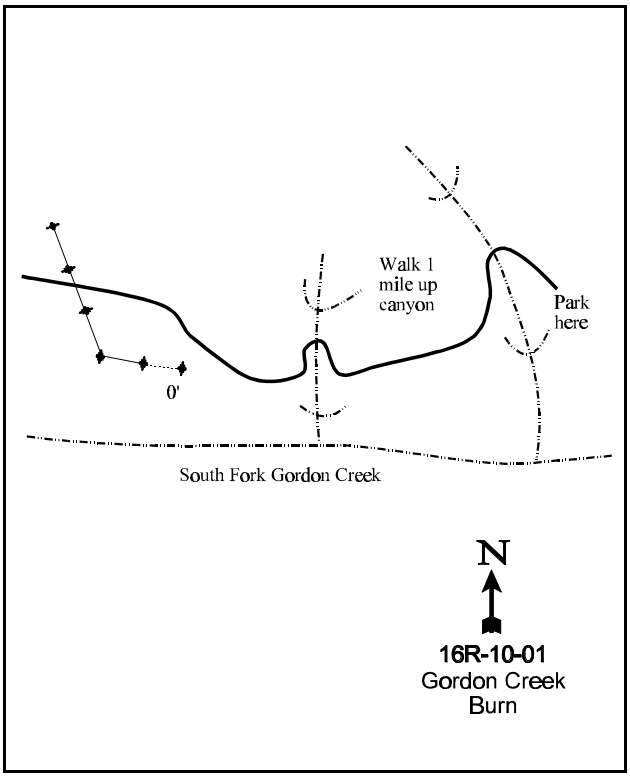
Compass bearing: frequency baseline westerly direction.

Frequency belt placement: line 1(11ft), line 2(34 ft), line 3(59 ft), line 4(71 ft), line 5 (95 ft). Rebar on each end of belts.

LOCATION DESCRIPTION

Travel west on Consumers Road (south of Helper) 2.85 miles and turn left. Continue 2.5 miles and cross the railroad tracks. Continue 0.95 miles, staying left, to the Gordon Creek Station. Turn right off the main road and proceed 1.1 miles, crossing the North Fork of Gordon Creek. Continue on this road over the next ridge to the South Fork of Gordon Creek. Park where the road is washed out. From here walk up the canyon about 1 mile to a flat that opens up on both sides of the road. The 0-foot baseline stake is located on the south side of the road. The baseline doglegs to the north after 200 feet. The 0-foot stake is marked by browse tag #187.





Map Name: Pinnacle Peak

Diagrammatic Sketch

Township 14S , Range 8E , Section 11

UTM 4385370 N 501330 E

DISCUSSION

Trend Study No. 16R-10

The Gordon Creek Burn study is located west of Price on the south fork of Gordon Creek. The site was established to monitor a 160-acre prescribed burn/seeding project that was conducted as part of a cooperative effort by the BLM, Division of Wildlife Resources, and the River Gas Corporation. The site once supported an overly mature stand of basin big sagebrush. In March of 1999, the site was burned using a helitorch, aerially seeded, and then lightly harrowed using ATV's to cover the seed. The transect was placed on an elevated flood plain above Gordon Creek to monitor the recovery of the vegetative community following the treatment. The site lies at an elevation of 6,300 feet on nearly level terrain.

Soils on the site are loamy in texture and very deep. Very little rock or pavement was sampled on the surface or within the profile. Soil reactivity is slightly alkaline (7.5 pH). The soils are low in phosphorus at 6.6 ppm, where values lower than 10 ppm can be limiting to normal plant growth and development. Several shallow gullies were forming on the site in 1999. In 2001, the vegetative community is better established and erosion is minimal. An erosion condition class assessment done in 2001 showed soils to be stable.

A pellet group transect was read along the vegetation baseline in both 1999 and 2001. In 1999, deer use was low at an estimated 4 deer days use/acre (10 ddu/ha), with no elk or cattle sign present. In 2001, deer and cattle use remained low at an estimated 5 deer days use/acre (12 ddu/ha), and 9 cow days use/acre (23 cdu/ha). However, elk use was heavy in 2001 at an estimated 139 elk days use/acre (344 edu/ha). This particular area appears to be attracting elk due to the abundance of prostrate kochia. This species was part of the seed mix following the prescribed burn and has become the dominant vegetation in 2001. Density was estimated at 22,995 mature plants/acre in 2001, an increase from 14,300 total plants/acre estimated in 1999. Due to the abundance of young and seedling kochia plants in 2001, only mature plants were counted in the shrub strips. Young and seedling kochia plants were sampled in the quadrats for cover only. Kochia plants were all classified as lightly utilized. However, estimating utilization on this species is extremely difficult due to their low growth form and abundant annual leader growth. With the high number of elk pellet groups sampled, it is apparent that kochia is the primary forage for elk. Kochia cover was estimated at 2% in 1999, increasing to over 28% in 2001.

Other important browse on the site include fourwing saltbush, winterfat, and basin big sagebrush. Fourwing saltbush had an estimated density of 1,880 plants/acre in 1999, decreasing to 1,520 plants/acre in 2001. All of the fourwing plants sampled in both years were seedlings or young. Winterfat and basin big sagebrush have estimated densities of around 500 plants/acre in 2001.

The herbaceous understory is diverse, but most species are not very abundant. Perennial grass species mostly include sand dropseed, western wheatgrass, Russian wildrye, intermediate wheatgrass, blue grama, Indian ricegrass, and Letterman needlegrass. All perennial grasses combine to provide only 2% average cover in 2001. Cheatgrass was sampled in both 1999 and 2001, but it is infrequent and will likely be held in check by the abundance and competition of prostrate kochia. Although forbs are more abundant than grasses, the only common species is alfalfa, which was seeded following the burn. Several annual forbs are present, but most were sampled only occasionally.

2001 TREND ASSESSMENT

Trend for soils is slightly up. Vegetation and litter cover have improved since 1999, resulting in less bare soil. Erosion is currently minimal. Trend for browse is up. Prostrate kochia has dramatically increased in density and cover which is good for soil protection as well as increases the palatable forage available to wildlife. A negative aspect to the dynamic expansion of kochia is that future increases in the understory and other desired shrubs may be suppressed. Fourwing saltbush and basin big sagebrush appear to be persisting on the site, but may not increase. Trend for the herbaceous understory is down. Perennial species decreased in sum of nested frequency, while annuals increased. Even with this increase they still only make up 17% of the herbaceous understory cover.

TREND ASSESSMENT
soil - slightly up (4)
browse - up (5)
herbaceous understory - down (1)

HERBACEOUS TRENDS --
Herd unit 16R, Study no: 10

Type	Species	Nested Frequency		Quadrat Frequency		Average Cover %	
		'99	'01	'99	'01	'99	'01
G	Agropyron cristatum	6	-	4	-	.13	-
G	Agropyron intermedium	15	8	7	3	.69	.56
G	Agropyron smithii	27	11	9	4	1.68	.82
G	Bouteloua gracilis	5	6	1	2	.15	.53
G	Bromus inermis	4	-	1	-	.03	-
G	Bromus japonicus (a)	2	-	2	-	.06	-
G	Bromus tectorum (a)	36	*76	15	26	.46	1.03
G	Elymus junceus	-	9	-	6	-	.15
G	Festuca ovina	-	3	-	2	-	.03
G	Oryzopsis hymenoides	14	*4	8	2	.23	.15
G	Sitanion hystrix	11	*-	4	-	.02	.00
G	Sporobolus cryptandrus	1	*15	1	6	.21	.15
G	Stipa lettermani	-	2	-	1	-	.00
Total for Annual Grasses		38	76	17	26	0.52	1.03
Total for Perennial Grasses		83	58	35	26	3.16	2.42
Total for Grasses		121	134	52	52	3.68	3.46
F	Chenopodium fremontii (a)	58	*17	26	7	7.25	.03
F	Descurainia pinnata (a)	-	*13	-	6	-	.05
F	Lappula occidentalis (a)	-	*29	-	13	-	.14
F	Lepidium spp. (a)	-	-	-	-	.00	-
F	Linum lewisii	43	*1	23	1	.77	.06

Type	Species	Nested Frequency '99	Nested Frequency '01	Quadrat Frequency '99	Quadrat Frequency '01	Average Cover % '99	Average Cover % '01
F	Medicago sativa	178	*142	66	56	6.57	10.65
F	Physalis longifolia	91	*-	41	-	5.83	-
F	Physaria spp.	2	-	2	-	.01	-
F	Salsola iberica (a)	-	7	-	2	-	.15
F	Sanguisorba minor	25	*-	12	-	.61	-
F	Sisymbrium altissimum (a)	-	*96	-	31	-	2.62
F	Taraxacum officinale	-	-	-	-	.00	-
Total for Annual Forbs		58	162	26	59	7.25	3.00
Total for Perennial Forbs		339	143	144	57	13.81	10.71
Total for Forbs		397	305	170	116	21.07	13.72

* Indicates significant difference at alpha = 0.10 (annuals excluded)

BROWSE TRENDS --
Herd unit 16R, Study no: 10

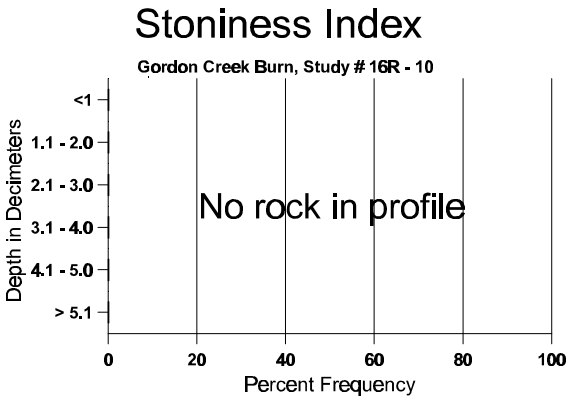
Type	Species	Strip Frequency '99	Strip Frequency '01	Average Cover % '99	Average Cover % '01
B	Artemisia tridentata tridentata	2	16	.02	.06
B	Atriplex canescens	33	34	.41	.07
B	Ceratoides lanata	24	17	.09	.06
B	Gutierrezia sarothrae	0	1	-	.03
B	Kochia prostrata	93	71	2.20	28.48
B	Opuntia spp.	0	3	-	-
Total for Browse		152	142	2.72	28.71

BASIC COVER --
Herd unit 16R, Study no: 10

Cover Type	Nested Frequency '99	Nested Frequency '01	Average Cover % '99	Average Cover % '01
Vegetation	288	427	33.91	43.19
Rock	6	5	.06	.04
Pavement	12	32	.04	.09
Litter	382	475	10.20	34.84
Bare Ground	490	385	69.72	35.97

SOIL ANALYSIS DATA --
Herd Unit 16R, Study no: 10, Gordon Creek Burn

Effective rooting depth (in)	Temp °F (depth)	PH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
N/A	53.0 (18.1)	7.5	41.3	44.2	14.5	1.9	6.6	144.0	0.8



PELLET GROUP FREQUENCY --
Herd unit 16R, Study no: 10

Type	Quadrat Frequency		Pellet Transect			
			Pellet Groups per Acre		Days Use per Acre (ha)	
	'99	'01	'99	'01	'99	'01
Rabbit	21	29	618	157	N/A	N/A
Elk	-	56	-	1810	-	139 (344)
Deer	1	4	52	61	4 (10)	5 (12)
Cattle	-	2	-	113	-	9 (23)

BROWSE CHARACTERISTICS --
Herd unit 16R, Study no: 10

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Artemisia tridentata tridentata																		
S	99	7	-	-	-	-	-	-	-	-	7	-	-	-	140			7
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	99	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
	01	23	-	-	1	-	-	-	-	-	24	-	-	-	480			24
M	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	11	7	1
X	99	-	-	-	-	-	-	-	-	-	-	-	-	-	3980			199
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	+92%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'99	40	Dec:	-
	'01	500		-

Atriplex canescens																		
S	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
Y	99	94	-	-	-	-	-	-	-	-	94	-	-	-	1880			94
	01	56	1	-	13	-	-	6	-	-	76	-	-	-	1520			76
M	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0	19	10	0
X	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	-19%
'01	01%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'99	1880	Dec:	-
	'01	1520		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Ceratoides lanata																		
S	99	9	-	-	-	-	-	-	-	-	9	-	-	-	180			9
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	99	22	-	-	1	-	-	-	-	-	23	-	-	-	460			23
	01	12	-	-	4	-	-	-	-	-	16	-	-	-	320			16
M	99	11	-	-	-	-	-	-	-	-	11	-	-	-	220	13	5	11
	01	6	1	-	1	-	-	-	-	-	8	-	-	-	160	10	8	8

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	-29%
'01	04%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
'99	680	Dec:		-
'01	480			-

Gutierrezia sarothrae																		
D	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	1	-	-	-	-	-	-	-	-	-	-	-	1	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	
'01	00%	00%	100%	

Total Plants/Acre (excluding Dead & Seedlings)			
'99	0	Dec:	0%
'01	20		100%

Juniperus osteosperma																		
X	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'99	0	Dec:	-
'01	0		-

Kochia prostrata																		
S	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	99	82	-	-	-	-	-	-	-	-	82	-	-	-	1640			82
	01	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	99	633	-	-	-	-	-	-	-	-	629	4	-	-	12660	16	16	633
	01	142	-	-	-	-	-	-	-	-	142	-	-	-	22995	16	21	142

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'99	00%	00%	00%	-80%
'01	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)			
'99	14300	Dec:	-
'01	22995		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Opuntia spp.																		
Y	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	01	2	-	-	-	-	-	-	-	-	2	-	-	-	40			2
M	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	01	1	-	-	-	-	-	-	-	-	1	-	-	-	20	-	-	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'99	00%	00%	00%
'01	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'99	0	Dec:	-
	'01	60		-